

We claim:

1. A network device configured to prevent data misalignment of a data packet containing extra header bytes, the network device comprising:

an ingress module having an input interface to receive a cell of the data packet;

a header detector configured to detect a header of a cell of the data packet and remove the header from the cell of the data packet;

a counter to determine whether the cell of the data packet contains a multiple of a predetermined number of bytes after the header has been removed;

an insertion module configured to insert null bytes into the cell of the data packet to form a modified cell of the data packet if the counter determines that the cell of the data packet does not satisfy the multiple of the predetermined number of bytes; and

an extraction module configured to remove the null bytes from the modified cell of the data packet as the modified cell of the data packet exits the network device.

2. The network device as recited in claim 1 wherein the network device comprises an aggregator that interfaces with an Ethernet and a SPI-4 communication system.

3. The network device as recited in claim 2 wherein the aggregator is configured to interface between a twelve 1-Gigabit ports and one 12 Gigabit/s SPI-4 uplink.

4. The network device as recited in claim 2 comprises a network switch.

5. The network device as recited in claim 1 further comprising:

a medium access control (MAC) protocol module having a MAC address for transmitting the modified cell of the data packet; and

a layer two switching module configured to build a table of forwarding rules upon which the MAC addresses exist and to instruct the extraction module to remove the null bytes from the modified cell of the data packet as the modified cell of the data packet exits the network device.

6. A method of preventing data misalignment of a data packet containing extra header bytes, said method comprising:

receiving a cell of the data packet at an input port of a network device;

detecting a header of a cell of the data packet;

removing the header from the cell of the data packet;

determining whether the cell of the data packet contains a multiple of a predetermined number of bytes after the header has been removed;

inserting null bytes into the cell of the data packet to form a modified cell of the data packet if the counter determines that the cell of the data packet does not satisfy the multiple of the predetermined number of bytes;

forwarding the modified cell of the data packet to an output port; and

removing the null bytes from the modified cell of the data packet as the modified cell of the data packet exits the network device.

7. The method as recited in claim 6, further comprising the step:

interfacing with an Ethernet and a SPI-4 communication system.

8. The method as recited in claim 7 wherein the interfacing occurs between a twelve 1-Gigabit ports and one 12-Gigabit/s SPI-4 uplink.

9. The method as recited in claim 6 further comprising the steps of:

providing a medium access control (MAC) protocol module having a MAC address for transmitting the modified cell of the data packet; and

providing a layer two switching module configured to build a table of forwarding rules upon which the MAC addresses exist and to instruct the extraction module to remove the null bytes from the modified cell of the data packet as the modified cell of the data packet exits the network device.

10. A network device configured to prevent data misalignment of a data packet containing extra header bytes, the network device comprising:

receiving means for receiving a cell of the data packet at an input port of the network device;

detecting means for detecting a header of a cell of the data packet;

header removing means for removing the header from the cell of the data packet;

determining means for determining whether the cell of the data packet contains a multiple of a predetermined number of bytes after the header has been removed;

inserting means for inserting null bytes into the packet to form a modified cell of the data packet if the counter determines that the cell of the data packet does not satisfy the multiple of the predetermined number of bytes;

forwarding means for forwarding the modified cell of the data packet to an output port; and

null byte removing means for removing the null bytes from the modified cell of the data packet as the modified cell of the data packet exits the network device.

11. The method as recited in claim 10, further comprising the step:

interfacing with an Ethernet and a SPI-4 communication system.

12. The method as recited in claim 11 wherein the interfacing occurs between a twelve 1-Gigabit ports and one 12-Gigabit/s SPI-4 uplink.

13. The method as recited in claim 10 further comprising the steps of:

providing a medium access control (MAC) protocol module having a MAC address for transmitting the modified cell of the data packet; and

providing a layer two switching module configured to build a table of forwarding rules upon which the MAC addresses exist and to instruct the extraction module to remove the null bytes from the modified cell of the data packet as the modified cell of the data packet exits the network device.